Claims

What is claimed is:

1. A method of increasing optical integrated circuit yield per wafer, comprising:

providing a wafer comprising a plurality of non-rectangular shaped optical integrated circuits;

forming stop cracks in the wafer, each stop crack adjacent one of the non-rectangular shaped optical integrated circuits;

cutting the wafer in a curvilinear manner to yield a plurality of separated non-rectangular shaped optical integrated circuits.

2. The method according to claim 1, wherein the stop cracks are curvilinear and positioned substantially parallel to the non-rectangular shaped optical integrated circuits.

3. The method according to claim 1, wherein the stop cracks have a width of about 25 microns or more and about 0.25 mm or less.

4. The method according to claim 1, wherein the stop cracks have a depth of at least about 10% of the thickness of the wafer.

5. The method according to claim 1, wherein the stop cracks are formed using one selected from the group consisting of a saw, a milling machine, a laser, a water jet, and chemical etching.

6. The method according to claim 1, wherein the optical integrated circuit is a planar lightwave circuit.

7. The method according to claim 1, wherein cutting is conducted by

one selected from the group consisting of laser cutting and water jet cutting.

8. A method of dicing a substrate comprising a plurality of non-rectangular shaped optical integrated circuits, comprising:

forming stop cracks in the wafer, each stop crack adjacent and substantially parallel one of the non-rectangular shaped optical integrated circuits; and

cutting the substrate in a curvilinear manner substantially parallel to a stop crack.

9. The method according to claim 8, wherein each non-rectangular shaped optical integrated circuit has two stop cracks adjacent and substantially parallel therewith.

10. The method according to claim 8, wherein the stop cracks are formed using one selected from the group consisting of a saw, a milling machine, a laser, a water jet, and chemical etching.

11. The method according to claim 8, wherein the stop crack has a width of about 10 microns or more and about 0.5 mm or less.

12. The method according to claim 8, further comprising filling the stop crack with a dielectric material prior to cutting the substrate.

13. The method according to claim 8, wherein the cutting is conducted by one selected from the group consisting of laser cutting and water jet cutting.

14. A structure, comprising:

a substrate;

a plurality of non-rectangular shaped optical integrated circuits on the substrate, each non-rectangular shaped optical integrated circuit comprising an active region; and

at least one stop crack positioned adjacent each non-rectangular shaped optical integrated circuit.

15. The structure according to claim 14, wherein the optical integrated circuit comprises a planar lightwave circuit.

16. The structure according to claim 14, wherein the substrate comprises at least one selected from the group consisting of silicon, silicon dioxide, silicon oxynitride, and silicate glasses.

17. The structure according to claim 14, wherein each stop crack is positioned adjacent and substantially parallel to the active region of each non-rectangular shaped optical integrated circuit.

18. The structure according to claim 14, wherein two stop cracks are positioned adjacent each non-rectangular shaped optical integrated circuit.

19. The structure according to claim 14, wherein each stop crack has a width of about 1 micron or more and about 1 mm or less.

20. The structure according to claim 14, wherein each stop crack has a depth that is at least about 5% of the thickness of the substrate.

21. An optical integrated circuit, comprising:

a substrate comprising two curvilinear longitudinal edges;

a non-rectangular shaped active region comprising optical

components; and

at least one stop crack positioned substantially parallel and proximate one of the curvilinear longitudinal edges.

22. The optical integrated circuit according to claim 21, comprising two stop cracks, each stop crack positioned substantially parallel and proximate one of the curvilinear longitudinal edges.